Thinking and Doing: Challenge, Agency and the Eudaimonic Experience in Videogames

Tom Cole and Marco Gillies

Goldsmiths, University of London

The nascent growth of videogames has led to great leaps in technical understanding in how to create a functional and entertaining play experience. However, the complex, mixed-affect, eudaimonic entertainment experience that is possible when playing a video game — how it is formed, how it is experienced and how to design for it, has been investigated far less than hedonistic emotional experiences focusing on fun, challenge and 'enjoyment.' Participants volunteered to be interviewed about their mixed-affect emotional experiences of playing avant-garde videogames. New conceptions of agency emerged (Actual, Interpretive, Fictional, Mechanical) from the analysis of transcripts and were used to produce a framework of four categories of agency. This new framework offers designers and researchers the extra nuance in conversations around agency, and contributes to the discussion of how we can design video games that allow for complex, reflective, eudaimonic emotional experiences.

Keywords: grounded theory, agency, eudaimonia, emotion, digital games

Introduction

Recent work on videogames has looked at more complex mixed-affect experiences (satisfying combinations of positive and negative affect) than is commonly seen in the medium at present (Bopp, Mekler, and Opwis (2016); Iacovides and Cox (2015); Mekler, Rank, Steinemann, Birk, and Iacovides (2016)).

Theories from other fields such as literature, film etc. (e.g. Eco (1989); Plantinga and Smith (1999)) provide a starting point but do not encompass the unique interactive nature of digital games. This notion of interactivity (as used here) renders our understanding of emotional experience and affect from other fields incomplete. Much work has been done on how hedonistic emotional experiences of game play are structured — in both 'fun' and 'serious' modes, leading to various discussions of how players come to feel emotion in games, and what kind of pleasures they might derive from play (Frome (2007); Lankoski (2012); Lazzaro (2009); Leino (2010) etc.). Yet there remains little focus on how we can design for the more complex 'mixed-affect' eudaimonic experience.

This paper presents a qualitative investigation that explored these more reflective, complex emotional experiences using interviews with a range of players about emotional moments from their game playing experience. Constructivist Grounded Theory Methodology (C-GTM) (Charmaz, 2014) was used to interview players with an interest in playing avant-garde games, and who therefore may have leanings towards this kind of complex emotional experience. Transcripts were subsequently analysed and coded. The emergent categories clus-

Tom Cole, Goldsmiths, University of London.
Marco Gillies, Goldsmiths, University of London.

tered around the concept of agency, and further analysis resulted in a new framework for describing four different types of agency. This can be used by designers and researchers to help research, shape and facilitate a broader range of emotional play experiences by equipping players with tools to meet a wider variety of challenges within games — ones which require emotions and imagination as well as strategy and skills.

Background

Our initial research questions were, "What is emotional challenge, and how is it constituted in digital play?" and, "How are the emotional experiences in avant-garde games different to those (if at all) to those of mainstream games?". In this context, we use the term 'avant-garde' to denote games which aim to do more than entertain, or which aim to evoke a complex, reflective emotional experience in the player. This term is less problematic than 'artistic', 'indie', or any other available term.

This investigation started by asking questions about players' reflective emotional experiences in digital games, and to further investigate what constitutes and describes 'emotional challenge' as described by Cole et al. (Cole, Cairns, & Gillies, 2015). As is the case with GTM, the direction of the investigation changed during analysis, and our work re-focused on the topic of agency. The work presented below reflects the endpoint of this investigation with a focus on agency, challenge in digital games and the eudaimonic entertainment experience.

Agency. Since it's definition by Murray as regards its use in digital media(Murray, 1997), the notion of agency has been discussed at length (e.g. Mason (2013); Tanenbaum and Tanenbaum (2010); Wardrip-Fruin, Mateas, Dow, and Sali (2009)). Earlier work extended the concept of agency focusing on the range actions available to players (e.g. Mateas (2001)) and later authors argued for agency to instead be considered as a 'commitment to meaning' — i.e. agency isn't

so much about the outcome, it's about the intent (Tanenbaum & Tanenbaum, 2009). Additionally, Tanenbaum and Tanenbaum were clear that this interpretation mainly applied to 'narrative games'.

Such later work was essential for broadening the definition of agency, but did so by attempting to graft extra meaning into the idea of agency, making it a overly broad and muddier concept. A better route may have been to establish new vocabulary to differentiate their notion to that already established. It may have also allowed their notion to have been applied more easily to games without a narrative focus (which may have been just as appropriate) and would have allowed this particular discussion on agency to proceed with more clarity and nuance. Additionally, even though they proposed a focus from the outcome to the intent of the player's actions, the end result is still focused upon the actions of the player in the diegesis. The outcomes of this investigation propose an even broader view of the how agency is understood in digital games.

The concept of agency *still* isn't used with consistency by either media or developers. It is often the case that a game gives the player control over their minute-to-minute actions (e.g. with combat or upgrade paths for equipment etc.), but allows them little to no effect on the narrative or interaction with and/or development of NPCs. This is common in triple-A games, where it simply costs too much to develop material/assets to make content that might never be seen, leading to games that usually play out, more or less, the same each time.

Some video games implant illusions of agency into the players mind, causing them to believe that they can affect and change the narrative or NPC development. A clear example of this is Telltale Games' Walking Dead episodic series of adventure games (Telltale Games, 2012), where the player is often told that a character will remember their responses in conversation or decisions, and is frequently faced with time-pressured choices with supposedly important consequences. Replays of an episode show that these responses and decisions

actually make little to no difference to the storyline or the gameplay. David Cage, the head of Quantic Dream, whose games' (e.g. Quantic Dream (2005, 2010, 2013)) marketing revolved around claims of being able to affect the narrative profoundly through your actions, has recently referred to his narratives as 'bending stories'— stories which can stretch a *little* bit, but which will always need to snap back into place sooner or later (Cage, 2013).

Even so, these decisions *still* mean something to the player. Whilst they may have no effect on the narrative or world of the game — in the space between the controller and the diegesis, they still have an effect in the space between the controller and the *mind of the player* — which can still profoundly affect the player's experience. In addition to a mechanical/functional possibility space for exploration, couldn't agency be used in reference to a cognitive/affective possibility space for reflection (Bartsch & Hartmann, 2017)? The common definition of agency at this time does not answer any of these questions satisfactorily.

Challenge. Challenge is key to the gameplay experience (Denisova, Guckelsberger, & Zendle, 2017), but games don't have to be difficult in order to be challenging. Recent work has posited that many games revolve around 'functional challenge' — where the player uses skills, strategy and dexterity to overcome environmental or enemy-based obstacles or puzzles. There are then a smaller number of games that can and do use 'emotional challenge' — in which the player uses cognitive and emotional effort to understand elements of the narrative or the characters, try and resolve ambiguities within the diegesis or deal with otherwise difficult material presented by the game (Cole et al., 2015). Work by Benford et al. (Benford et al., 2012) created a range of interactions that caused discomfort to the user and yet were still rewarding. This suggests that emotional challenge is important for the more reflective experience resulting in psychological growth (Hartmann, 2013) that many are interested in.

Cole's notion of 'emotional challenge' has been further investigated by Bopp et. al (Bopp et al., 2016; Bopp, Opwis, & Mekler, 2018) where they found that negative emotions were important to many satisfying gaming experiences and that this range of negative emotions could potentially be broader than the range of positive emotions experienced by players. In addition to showing the appeal of 'uncomfortable interactions'(Benford et al., 2012) they also showed that reflection was a key component of emotional challenge and the experience of mixed affect. Other work by Bartsch and Hartmann suggests that different combinations of cognitive and affective challenge (analogous to Cole's 'emotional challenge') gave an entertainment experience that can lean more towards either fun/enjoyment, suspense, or appreciation (Bartsch & Hartmann, 2017).

The experience of spectacle, wonder, hard fun and 'functional challenge' (in Cole's terminology) has been covered elsewhere and is common in digital gameplay (King & Krzywinska, 2006; Lazzaro, 2004, 2009; Surman, 2007). The focus of this paper is not on this, but on exploring Cole's notion of emotional challenge, and the complex, mixed-affect emotional experience that often arises from playing more avant-garde games (Schrank & Bolter, 2014; Sharp, 2015).

Eudaimonic Media Experience

Recent research in media research has explored the ideas of hedonistic vs. eudaimonic entertainment (Bartsch, 2012; Bartsch & Hartmann, 2017; Oliver & Bartsch, 2010; Wirth, Hofer, & Schramm, 2012), as a means for understanding why viewers purposefully view 'difficult' films that do not necessarily give pleasure as it is commonly understood (maximisation of positive affect, minimisation of negative affect (Oliver & Bartsch, 2010)).

Whereas the purpose of hedonistic entertainment is to maximise enjoyment for the viewer (and is pleasure-seeking), eudaimonic entertainment aims to evoke a strong sense of 'appreciation' in the viewer (and is meaning-seeking). 'Ap-

preciation' is defined by Oliver as, *"an experiential state that is characterised by the perception of deeper meaning, the feeling of being moved, and the motivation to elaborate on thoughts and feelings inspired by the experience."* (Oliver & Bartsch, 2010) These two types of entertainment fulfil different need gratifications in the viewer — both of which can result in satisfying experiences and strong motivations for viewing. The majority of research to date has focused on the hedonistic mode of entertainment (Bartsch, 2012) and research on eudaimonic gratifications and motivations is nascent (Mekler & Hornbæk, 2016). Oliver et al. recently investigated the potential for eudaimonia/appreciation in digital games (Oliver et al., 2016), and associated mechanical gratifications with enjoyment and narrative gratifications with appreciation. Many other studies have shown that this distinction is oversimplified (e.g. Benford et al. (2012); Cole et al. (2015); Lankoski (2012)).

Emotional Player Experience in HCI

Some game and HCI researchers have claimed to investigate emotion in games although they have tended to conflate it with pleasure or motivation. Lazarro's well-known paper, 'Four Keys to More Emotion in Player Experiences'(Lazzaro, 2004) does not deal with emotion per se, but rather aims to clarify what kinds of 'fun' there are to be had in a videogame, and how to design for them. Bartle's seminal work (R. A. Bartle, 2004) investigates *motivation*, but it does not explore player *emotion* — although, as pointed out by Bartle himself, it is sometimes misquoted as doing so (R. Bartle, 2009). Other work has focused on a generalised form of 'emotional response' (Sykes & Brown, 2003), or have taken physiological measurements of emotional arousal but have been unable to ascribe it to any emotion or group of emotions in particular L. Nacke (2009); L. E. Nacke, Stellmach, and Lindley (2011). Others have focused directly on one emotion such as fear (Perron, 2009), or made general arguments that video games are emotional but without describing *how* these expe-

riences come about (Isbister, 2016). Many have focused on enjoyment in digital games, but found it difficult to agree on a definition that would allow cross-study comparison (see Mekler, Bopp, Tuch, and Opwis (2014) for a substantial review). These studies also seem to ignore the many players that engaged with digital games for experiences resulting in something other than what is covered by the, arguably shallower, satisfactions of 'enjoyment' or 'pleasure' found in the hedonistic entertainment experience (Marsh & Costello, 2012).

The combination of positive and negative affect ('mixed affect') that is characteristic of the eudaimonic entertainment experiences has been investigated by several researchers within the HCI community (Bopp, Mekler, & Opwis, 2015; Iacovides & Cox, 2015; Marsh & Costello, 2012; Mekler & Bopp, 2015; Mekler et al., 2016). This work has established that what Oliver terms 'appreciation' is an important part of many interactive experiences, but more work is needed to establish how these experiences are structured and how they can be designed for.

Methodology

Grounded Theory Methodology (GTM) is a powerful way to develop theories in domains where there are obvious opportunities to contribute in the form of carefully developed descriptive or explanatory conceptual theories, and is a proven means by which new categories and theoretical concepts can be developed with clear fit and relevance to a chosen field of study. This investigation used Constructivist Grounded Theory Methodology (C-GTM) (Charmaz, 2014). Readers unfamiliar with GTM, or how C-GTM differs from Straussian or Glaserian GTM may benefit from Hook's (Hook, 2015) and Salisbury and Coles' introductions (Salisbury & Cole, 2016).

Previous research has indicated that strong emotional experiences have been shown to often be those that have long-lasting impact (Iacovides & Cox, 2015; Marsh & Costello, 2012; Mekler & Bopp, 2015). In this project we were interested in

strong emotional experiences players had felt during gameplay. Therefore interviews on memories of playing, as opposed to real-time measures of affect during gameplay are more appropriate given the focus of this paper.

Participants

Recruitment focused on players of avant-garde games that are known for encouraging or stimulating the kind of complex emotional experience that produces a sense of 'appreciation' (Oliver & Bartsch, 2010) or psychological growth (Hartmann, 2013), since this was the type of experience we were interested in understanding. Participants were recruited via gaming-related Facebook groups, from personal acquaintance and Steam and Reddit forums.

Nine participants were interviewed — five men and four women, representing a range of nationalities (American, British, German, Greek, Norwegian, Pakistani). All participants were aged 22-38 and fluent in English. All were experienced games players (having a minimum of 10 years gaming experience), two were also developers. Interviews were semi-structured and carried out by the primary author in English — two in person and seven via instant text-messaging services such as Facebook Messenger. Interviews lasted between 2.5 and 3.5 hours. Resultant transcripts were over eighty-thousand words long in total.

Participants volunteered their time out of interest for the project rather than for fiscal compensation, which research has suggested leads to higher quality data (Wiseman, Cox, Gould, & Brumby, 2017).

Procedure

Recruitment posts were made on using the channels listed above and readers were invited to email the primary author to express interest. Consent forms were circulated and completed prior to interview. A question prompt sheet was prepared beforehand by the interviewer to maintain focus in the conversation, but not restrict it too much so as to allow interesting conversations to emerge.

Early interviews would begin with questions about play habits e.g. 'How much do you play?', 'What formats do you use?' 'What kind of games do you play?' etc. In later interviews, these kinds of questions were asked in the first few minutes to establish rapport, but it became important to quickly identify a deep and moving emotional moment from their gaming experience, why it happened, and to discuss it in as much detail as was possible. e.g. 'Why do you like playing <x>? What draws you to it?', 'What do you find attractive about playing video games?', 'Do you think you have changed as a person as a result of your gaming?' etc.

Early coding and memoing began after the first interview and continued to take place after each subsequent interview. Later codes and categories were triangulated with the interviewer's knowledge and analysis of the video games discussed by participants.

Results and Discussion

When asked to choose a gameplay experience to discuss, almost all participants chose emotional experiences resulting in a sense of 'appreciation' to speak about during interviews. Language generally described a reflective state of mind and a mix of positive and negative affect.

All coding and analysis was done by the primary author. Most participants played a variety of games (avant-garde to triple-A, on mobile, console, PC etc.) but the majority of the interviews concerned games with more avant-garde intentions played on console or PC.

In early analysis, five categories appeared considerably more than others: world building, environmental narrative, social activity, ambiguity and immersion. The two most prominent of these early themes were 'immersion' and ambiguity:

> *"I really enjoyed that you could just wander around this **immersive** en-*

vironment, you could control which quest to take on next. Yeah, I just found it extremely atmospheric." (P2, on *Skyrim*)

*"I love **the sense of ambiguity that pervades the world**...I love that it's never made explicit who these people are or what their war was about..."* (P3, on *Brothers: Tale of Two Sons*)

'Immersion' was not used in the more accurate sense that it often is in other studies (e.g. Brown and Cairns (2004); Calleja (2011); Jennett et al. (2008)). Immersion, as a code, was therefore discounted as part of this study.

At this point further insights were not arising from the earlier interviews and theoretical development had stalled. Before progressing to further interviews, and as recommended by Charmaz (Charmaz, 2014), detailed line-by-line coding (cf. adhoc multi-line coding) was used to engage with the data from a different viewpoint. Codes were given to every line, with no overlap between codes.

This new approach to analysis revealed a focus on environmental/embedded narrative (story conveyed through the objects/scenery of the virtual world, (Jenkins, 2004)), and how this helped players to actively involve themselves in building their own understanding of the diegesis.

*"I was pretty blown away by how interesting the storytelling style was the **environmental narrative**, ephemera, embodiment stuff I was super excited to discover all of that."* (P8, on *Gone Home*)

*"The fact that it was all told through **environmental storytelling made the game feel very personal."***(P4, on *Gone Home*)

Further analysis showed that exploration of the world, as well as having ample time to appreciate it, was a major part of the experience for those

games mentioned by participants. This opportunity to explore the *narrative* of the diegesis through environmental cues — in a way that's similar to how we explore the *physics* of the diegesis with mechanics — may afford the player increased opportunity to construct their own personalised and reflective emotional response to their gameplay experience — analogous to that of appreciation or the eudaimonic entertainment experience.

*"But of course, that is **my interpretation**, which **made it feel personal and like I was connecting on a deep level** with not just the narrator but the creators of the game."* (P9, on *Dear Esther*)

It was almost as if players were 'rising to the challenge' of mastering the *content* or narrative of the game, rather than mastering the mechanics. A challenge of *understanding*, rather than *doing*.

In addition to the description of different kinds of challenges (similar to those described by Cole (Cole et al., 2015) and Denisova (Denisova et al., 2017)), the requirement for *time to appreciate* this embedded narrative, plus the extensive talk about ambiguity hints at different ways for players to meet these challenges and take control of how their own gameplay experience is constituted. These obstacles are not just set by the mechanics (i.e. functional challenge), but also by trying to piece together what is happening in the diegesis or deal with difficult decisions (i.e. emotional challenge).

*"like, i think that Gone Home has challenge...**but it unfolds in the players head...the challenge is to piece together the story**...to draw conclusions based on all the things that you find in the game."* (P4, on *Gone Home*)

The emotional challenge in games such as *Gone Home*, *Dear Esther*, *Journey* (thatgamecompany, 2012) etc. bears an interesting similarity to

the eudaimonic/mixed affect experience of consuming media for appreciation or psychological growth (Hartmann, 2013; Oliver & Bartsch, 2010). Therefore, understanding how the player's agency was involved in overcoming these emotional challenges was important. If different kinds of challenges are being set, then it's possible that different types of agency need to be afforded the player in order to solve those challenges.

Subsequent work involved further interviews with new subjects and the recategorising of codes using experimental notions of agency related to functional and emotional challenge. New terminology — 'mechanical agency' (to do with character action and movement) and 'narrative agency' (the freedom with which the player can interpret the story) were created for this purpose. 'Narrative agency' seemed an important part of the experience for our participants, and yet one that did not fit into the commonly understood meaning of 'agency'.

> *"...Gone Home does that by providing a narrative context through which **you're unravelling the story** as the character in an active way."*
> (P8, on *Gone Home*)

It became clear there were several obvious exceptions to these early notions of mechanical and narrative agency:

- What about games where you actually *can* significantly affect the diegesis and the narrative, and not just an *interpretation* of it?

- What about those games (however unusual they may be) which make you question the logic or morality of your actions, without explicitly dictating how you should feel?

- What about those games where you don't really have much choice but to use the mechanics in a prescriptive and predetermined fashion?

Neither these terms, nor established definitions of agency account for what our data suggested. Conventional notions of agency relate to how players overcome *functional* challenge, but do not speak to how they might be enabled to overcome *emotional* challenge.

We felt a new language for agency was needed. One that accounts for what the player can think (*interpretive*) versus what the player can do (*actual*), and for whether an action affects the narrative and characters of the game (*fictional*) versus the actions of the player themselves (*mechanical*). This new framework resulted from combining the analysis so far with previous knowledge and analysis of a broad range of videogames, some of which were discussed by participants.

Definitions of terms

These terms are used in context of the authors' new theory described in this paper, and so require definition.

Actual. This is similar to the pre-established understanding of agency. 'Actual' agency describes the meaningfulness of the player's actions and how much effect those actions have.

This is different to the range of *options* given to the player. If a player has a wide variety of actions to choose from but this choice is of no consequence then they still have no actual agency (MacCallum-Stewart & Parsler, 2007; Murray, 1997).

Interpretive. Refers to the ability for the player to construct their own cognitive and emotional understanding. In a sense it is the extent to which they can take action with their own thoughts and build their *own interpretation* of the data given them. Scant or conflicting data means a player may need to make more effort in order to 'fill the gaps' or make connections between pieces of information. It gives players the ability to enter into an ambiguous and interpretive space, even if it's not necessary for progress within the game. There is a minimum grounding or foundation needed for players to build their interpretation (Bogost, 2007; Gaver, Beaver, & Benford, 2003).
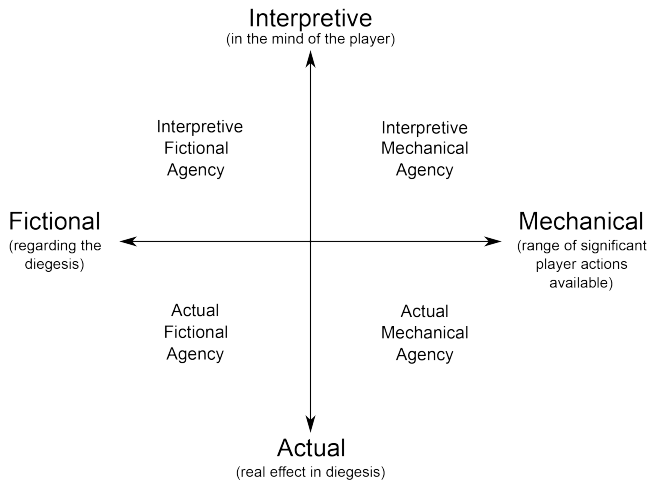
Interpretive
(in the mind of the player)

Interpretive   Interpretive
Fictional   Mechanical
Agency   Agency

Fictional   Mechanical
(regarding the   (range of significant
diegesis)   player actions
                                                  available)

Actual   Actual
Fictional   Mechanical
Agency   Agency

Actual
(real effect in diegesis)

Figure 1. Agency Grid.

Fictional. Fictional agency is that pertaining to the world, story, narrative or NPCs of the game.

Mechanical. Mechanical agency describes the player's range of actions within the diegesis. For instance, avatar movement and control is a common element of mechanical agency. A higher level of mechanical agency would add combat, then abilities to manipulate elements of the environment etc.

Agency Grid

These four new terms can be combined to form 4 new concepts of agency. Figure 1 shows a visual representation of this. These categories are **not** mutually exclusive, and so any or all of these forms of agency can be present, and often are, in differing degrees.

Actual Mechanical (AMA). Actual mechanical agency is the genuine effect of the players actions and mechanics within the game and is analogous to the common understanding of the word 'agency'. The majority of video games have a reasonably high level of AMA. For a player to have actual mechanical agency, their actions and decisions would need to lead to a significantly different outcome in terms of systems and mechanics, though not in the narrative.

For instance, if you had a choice of three weapons, all with the same properties and usage, the player doesn't have any agency — the choice is *mechanically* insignificant. Upgrading some character traits in a way that clearly affects how the game is played (e.g. stamina, health, magic points etc.), or using various combat options to gain victory over enemies, or solving puzzles are clear examples of actual mechanical agency because the choices involved have a significant effect on the outcomes and possibilities for the player.

Actual Fictional (AFA). Actual fictional agency is when the player can change the course of the story of the game via their actions, or affect the development and story of other characters in the diegesis (cf. extra-diegetic 'player-generated story', see Calleja (2009)). Most games aim to make the player feel like the driving force behind the game and the story, but the reality is that the player is being led or pulled along the 'main story line' by the developers of the game and can often only affect a few unimportant details.

It's especially difficult for triple-A games to have much AFA. The high quality assets expected (and time and money required to produce them) mean it's uneconomical and undesirable for them to be left unseen or unused, should the player choose a different route through the game and leave areas unexplored. Higher levels of AFA is seen more in interactive fiction and text-heavy games, where the production of assets (mainly text) is relatively cheap. For example, the hit mobile interactive fiction game *80 Days* by Inkle (Inkle, 2014) contains approximately 750,000 words, yet the average player on a single playthrough will see about 3% of that number. There are over 10,000 decisions to be made in the game, with several of them highly significant (Studios, 2015) — affording the player a high level of actual fictional agency. In *Papers Please* (3909 LLC, 2013) — a low-resolution 2D game made by a single developer, the player is presented with several choices which, combined with their performance in the game, allows them to experience a total of 20 different endings. Several choices have

knock-on effects on the availability of other decisions later in the game.

Compare this to *Heavy Rain* — marketed as allowing the player 'real choice' and actual fictional agency. However, choices (and success/failure during most of the games action sequences) affect a few lines of a conversation at most or a cut-scene or two ,with little to no change to the central story-line. It is a similar case with other triple-A games promising the same such as *Until Dawn* (Supermassive Games, 2015), or the *Mass Effect* series (Bioware, 2007-date).

> *"..once we finished our playthrough I restarted to see how making different choices would have an effect on how the story plays out...so I replayed the prologue entirely differently and everything pretty much ended up the same."* (P6, on *Until Dawn*)

Role-playing games (such as The *Elder Scrolls* (Bethesda Game Studios, 1994-date) or *The Witcher* series (CD Projekt RED, 2007-date)) create an appearance of AFA with an abundance of 'side quests' (optional tasks offering variable rewards). The results sometimes affect details in the main quest, but there are still few ways to significantly affect the story or central outcomes of the game.

Interpretive Mechanical (IMA). Encourages the player to examine their actions in the game and what they mean when the answers are not made clear to them. This is not the same as the diegetic or mechanical effects of those actions themselves — it is the moral value/judgement, or significance of those actions, that the player is left to consider. It is not about what the player intended, or about their 'commitment to meaning' (Tanenbaum & Tanenbaum, 2009), it is *'How does the player feel about their actions, in the absence of feedback (or presence of conflicting feedback) telling them how they **should** feel?'*. It is far less common than the other forms of agency defined here.

> *"So yes I think the challenge is more about **the meaning behind your actions**/the experience you have."* (P5, on *The Beginners Guide* (Everything Unlimited Ltd., 2015), *Dear Esther* (The Chinese Room, 2012), *Dr. Langeskov* (Crows Crows Crows, 2015))

A good example is the interpretation of the player's actions in *Papers Please* (3909 LLC, 2013). The player's sole responsibility is check a person's documents against a set of rules and stamp an NPC's passport with 'ACCEPT' or 'REJECT'. The player is faced with dilemmas (e.g. a woman asking you to refuse entry to a man who is behind her in the queue, since he is going to force her into sexual slavery), and the player can choose what to do. However, there is usually no feedback as to what happened next — the game takes place in the confines of your booth at the border, meaning you will never know the effect of your actions. You do not know if the woman was telling the truth, and you do not know if it is worth making a deliberate mistake (the game's equivalent of 'lives'). In this instance, the player is left to think about their actions, how much they meant, whether they could have acted otherwise, and whether they were right to act as they did. The game gives no clear information on any of these things.

Conflicting feedback can achieve a similar effect. The players' 'success' when killing the colossi of *Shadow of the Colossus* (SCE Japan Studio, 2005) is met with positive feedback in the form of progress in the game. Yet the music is mournful and the player appears to be 'killed' by black tentacles emanating from the colossi's corpse, only to reappear mysteriously back at the centre of the game world (Cole, 2015). The conflicting feedback in this case leaves the player guessing as to what diegetic and moral value their actions were.

Interpretive Fictional (IFA). A game with a significant level of interpretive fictional agency gives the player a minimal narrative framework

and encourages them to build their own understanding of the fiction, story and characters. Players are encouraged to conceptually explore the representative and historical elements of the diegesis and construct their own personally nuanced interpretation. The greater effort made by the player to understand what is going on in the diegesis leads to a nuanced and more personalised engagement with the game and therefore a higher chance of significant emotional payback and a deeper emotional experience (Tan, 2013).

> *"So I have to explore in order to find out details of what happened, slowly building the bigger picture. **I'm more invested** because I am finding out about the character's positions on things myself. And that shapes my conclusions on what I think happened."* (P4, re: *Gone Home*)

Many of the games participants spoke of have a heavy element of exploration woven into them, with the environment and/or ephemera conveying components of the narrative. The player can choose which bits of information they are exposed to, and they will often have an incomplete set of information to work with. This encourages the player to work out what they can with the information they *do* have.

Many 'first-person experiences' such as *Everybody's Gone to the Rapture* (The Chinese Room & SCE Santa Monica, 2015), *Gone Home* (The Fullbright Company, 2013) or *Firewatch* (Campo Santo, 2016) make extensive use of IFA as a central part of their gameplay experience. In *Gone Home* the player explores an abandoned house looking on desks, in drawers, waste paper baskets etc. for fragments of information about what has happened to their family. The extent of the player's search of the house, and what order they search the house in, has a major effect on how much they understand what has happened and why, and subsequently plays a major part in the player's interpretation and in meeting the emotional challenge of the game.

IFA vs. Player-Generated Narrative. IFA is different from the 'player-generated story' that is constructed by the player from emergent mechanics, as found in games like *Minecraft* Mojang (2011) or *DayZ* (Bohemia Interactive, 2013). Calleja's work (Calleja, 2009) provides a good discussion of this, where he defines the moment-to-moment narrative that is generated when the mind of the player, the rules of the game and the game's audio-visual elements meet and combine during gameplay (a process he refers to as 'synthesis').

IFA is about giving players the tools to *conceptually* explore the diegesis as predetermined by the developers (usually in a single-player experience), rather than mechanically explore a set of systems such as is done in *Eve Online* (CCP Games, 2003) and other multi-player experiences. IFA is an *ability* rather than the result of a *process*, such as alter-biography. The result of greater IFA is the player's increased ability or freedom to interpret and construct their own understanding of a pre-existing diegesis, rather than create any new narrative in and of itself. To play *The Sims* (Maxis & The Sims Studio, 2000-date) or *SimCity* (Maxis, 1989-date) is to create a player narrative that arises from interactions within the games rule set (experiential narrative). To play *Dear Esther* (The Chinese Room, 2012) or *Firewatch* (Campo Santo, 2016) is to explore a diegesis that is pre-built by the developers and which affords a large degree of freedom in its interpretation (IFA).

Summary of Agency Framework. Agency is usually framed in terms of how the player can act, or intend to act, within the diegesis. A case was made here to broaden the discussion to include how the player uses their imagination and interpretation, in addition to how they use a control interface to engage with a diegesis. The new vocabulary and definitions suggested here will hopefully aid future discussions amongst designers and researchers as the medium diversifies and grows.

Use of IFA (and, to a lesser extent, IMA) could

encourage complex, mixed-affect emotional experiences such as those described in other media by Bartsch, Oliver and Hartmann (Bartsch, 2012; Hartmann, 2013; Oliver & Bartsch, 2010). There seems to be a degree of overlap with Cole's concept of emotional challenge and, along with work by Bopp, Mekler and others (Bopp et al., 2016, 2018; Mekler & Hornbæk, 2016; Mekler et al., 2016), the agency framework provides provides fertile ground for further exploration of how to broaden and deepen emotional engagement within digital games, with more of an emphasis on the study of the eudaimonic, rather than the hedonistic, emotional response to digital play as has historically been the case.

Summary

Challenge is a core element of the gameplay experience. Players experience a range of challenges in games and must overcome *emotional* challenges as they do functional challenges. The widely-accepted definition of agency is useful for describing the tools to overcome functional challenge, but does not deal with tools for facing emotional challenge.

Four new types of agency have been detailed here — interpretive fictional, interpretive mechanical, actual fictional and actual mechanical. It is hoped that this new categorisation of different types of agency might serve to move the conversation on agency forward — from attempting to find one all-encompassing definition to acknowledging that different types of agency co-exist and can be investigated and discussed separately.

The data suggests that IFA is prevalent in many of the games discussed here and we suggest here that a higher level of this kind of agency contributes to the very different emotional experience when compared to more mainstream titles. Previous work has found that interpretations and emotional responses to avant-garde titles were far more varied when compared to those arising from playing mainstream games (Cole et al., 2015). This suggests that in these games the player is bringing more of themselves to the gameplay experience than they may do in mainstream games — where emotional responses were broadly the same. This increased effort in engaging with the diegesis can potentially result in a bigger emotional pay-off and greater emotional satisfaction (Tan, 2013).

The suggestion made here is that games with higher levels of interpretive fictional agency — those which allow players more room to build their own individualised interpretation of the diegesis, and their actions within it, raise the probability of a reflective eudaimonic emotional experience.

Limitations and Future Work

This was an exploratory study into an aspect of research that has only recently been to garner interest (emotional challenge and the eudaimonic emotional response in digital games). The four new categories of agency suggested in this paper here could be made suitable for quantitative assessment and use. If a reliable rating system for the levels of each of the four types of agency could be devised, then a cross-genre analysis of digital games triangulated with an analysis of their formal features could yield powerful and important insights on the emotional effects of certain design features and development choices. In the same way that developers already spend much time and effort analysing the cognitive models behind actual mechanical agency (AMA), more work on the cognitive models that may underpin interpretive fictional agency (IFA) would further help researchers and designers understand the more reflective kind of gameplay experience.

Media research concepts of appreciation, mixed-affect, and eudaimonic entertainment resonate strongly with the observations made during this investigation and are only just beginning to be recognised in HCI research around digital games. The relationship between Cole's concept of emotional challenge and Oliver's concept of 'appreciation' provides many avenues for further research.

In the light of discussions here and the work of Oliver (Oliver et al., 2016), if the interactive nature

of digital games really does increase susceptibility to powerful and nuanced emotional experiences, then it means we have barely scratched the surface of what emotional experiences games are capable of.

Conclusion

This paper presented a Constructivist Grounded Theory Methodology (C-GTM) investigation into complex emotional experiences in digital games which led to an emerging theme of agency, and how this is used to meet the emotional (cf. functional) challenges of the games discussed.

We found that pre-existing discussions of agency did not suit what we were observing in the data, and so four new categories of agency were constructed. These categories of agency allow greater accuracy in conversations amongst designers and researchers, and how design choices affect the play experience. Of particular interest to us here was that games with a higher level of interpretive fictional agency (IFA) seemed to lead to a more reflective and/or mixed affect emotional experience. In the same way that a more mainstream game provides the actual mechanical agency for players to overcome the functional challenges presented, the avant-garde games discussed here provided the interpretive fictional agency for players to overcome the emotional challenges presented and respond with a eudaimonic emotional response.

This analysis provides suggestions for designing games for complex emotional experiences, vocabulary with which to discuss agency with more clarity and nuance, and several avenues for further investigation into how the eudaimonic emotional experience of gameplay is constituted.

Acknowledgements

Author Biographies

Tom Cole is a PhD Candidate at Goldsmiths, University of London. His research is situated at the boundary between HCI and Games Studies, and revolves around how we can broaden and deepen emotional engagement in videogames with an emphasis on rules, systems, mechanics and control schemes.

Marco Gillies is Reader in Computing, Academic Director for Distance Learning and member of the Embodied Audio-Visual Interaction group at Goldsmiths, University of London. Marco's research centres on virtual character, virtual reality and immersive embodied interaction.

References

3909 LLC. (2013). Papers Please. Game [multiformat]. (USA. Played November 2013)

Bartle, R. (2009). Beyond game design: Nine steps towards creating better videogames. In C. Bateman (Ed.), *Beyond game design: Nine steps towards creating better videogames* (chap. Understanding the limits of theory). Delmar.

Bartle, R. A. (2004). *Designing virtual worlds*. New Riders.

Bartsch, A. (2012). Emotional gratification in entertainment experience. why viewers of movies and television series find it rewarding to experience emotions. *Media Psychology*, *15*(3), 267–302.

Bartsch, A., & Hartmann, T. (2017). The role of cognitive and affective challenge in entertainment experience. *Communication Research*, *44*(1), 29–53.

Benford, S., Greenhalgh, C., Giannachi, G., Walker, B., Marshall, J., & Rodden, T. (2012). Uncomfortable interactions. In *Proceedings of the sigchi conference on human factors in computing systems* (pp. 2005–2014).

Bethesda Game Studios. (1994-date). The Elder Scrolls series. Game [multi-format]. (Rockville, USA. Played February 2017.)

Bioware. (2007-date). The Mass Effect series. Game [multi-format]. (Edmonton, Canada.)

Bogost, I. (2007). *Persuasive games: The expressive power of videogames*. MIT Press.

Bohemia Interactive. (2013). DayZ. Game [PC]. (Prague, Czech Republic.)

Bopp, J. A., Mekler, E. D., & Opwis, K. (2015). It was sad but still good: Gratifications of emotionally moving game experiences. In *Proceedings of the 33rd annual acm conference extended abstracts on human factors in computing systems* (pp. 1193–1198).

Bopp, J. A., Mekler, E. D., & Opwis, K. (2016). Negative emotion, positive experience?: emotionally moving moments in digital games. In *Proceedings of the 2016 chi conference on human factors in computing systems* (pp. 2996–3006).

Bopp, J. A., Opwis, K., & Mekler, E. D. (2018). "an odd kind of pleasure": Differentiating emotional challenge in digital games. In *Proceedings of the 2018 chi conference on human factors in computing systems* (p. 41).

Brown, E., & Cairns, P. (2004). A grounded investigation of game immersion. In *Chi'04 extended abstracts on human factors in computing systems* (pp. 1297–1300).

Cage, D. (2013, September 3rd). *The bafta annual games lecture.* Live lecture and transcript. (Transcript retrieved 29th March, 2017 from `http://static.bafta.org/files/david-cage-bafta-lecture-2030.pdf`)

Calleja, G. (2009). Experiential narrative in game environments. *Digital Games Research Association (DiGRA) proceedings*.

Calleja, G. (2011). *In-game: From immersion to incorporation*. MIT Press.

Campo Santo. (2016). Firewatch. Game [multi]. (Bellevue, USA. Played June 2017.)

CCP Games. (2003). Eve Online. Game [PC]. (Reykjavik, Iceland. Played February 2017.)

CD Projekt RED. (2007-date). The Witcher Series. Game [multi-format]. (Warsaw, Poland. Played October 2016.)

Charmaz, K. (2014). *Constructing grounded theory*. Sage.

Cole, T. (2015, May). The tragedy of betrayal: How the design of ico and shadow of the colossus elicits emotion. In *Proceedings of the 2015 digra international conference.* Digital Games Research Association. Retrieved from `http://www.digra.org/wp-content/uploads/digital-library/189_Cole_The-Tragedy-of-Betrayal.pdf`

Cole, T., Cairns, P., & Gillies, M. (2015). Emotional and functional challenge in core and avant-garde games. In *Proceedings of the 2015 annual symposium on computer-human interaction in play* (pp. 121–126).

Crows Crows Crows. (2015). Dr. Langeskov, The Tiger, and The Terribly Cursed Emerald: A Whirlwind Heist. Game [Windows, OSX]. (Maryland, USA. Played March 2017.)

Denisova, A., Guckelsberger, C., & Zendle, D. (2017). Challenge in digital games: Towards developing a measurement tool. In *Proceedings of the 2017 chi conference extended abstracts on human factors in computing systems* (pp. 2511–2519).

Eco, U. (1989). *The open work*. Harvard University Press.

Everything Unlimited Ltd. (2015). The Beginners Guide. Game [Windows, Linux, OSX]. (Cambridge, England. Played August 2016)

Frome, J. (2007). Eight ways videogames generate emotion. In *Digra conference.*

Gaver, W. W., Beaver, J., & Benford, S. (2003). Ambiguity as a resource for design. In *Proceedings of the sigchi conference on human factors in computing systems* (pp. 233–240).

Hartmann, T. (2013). Media entertainment as a result of recreation and psychological growth. In E. Scharrer & A. Valdivia (Eds.), *The international encyclopedia of media studies*. Blackwell Publishing.

Hook, N. (2015). Game research methods. In P. Lankoski & S. Björk (Eds.), (pp. 309 –320). ETC Press.

Iacovides, I., & Cox, A. L. (2015). Moving beyond fun: Evaluating serious experience in digital games. In *Proceedings of the 33rd annual acm conference on human factors in computing systems* (pp. 2245–2254).

Inkle. (2014). 80 Days. Game [multi-format]. (Cambridge, England. Played August 2016)

Isbister, K. (2016). *How games move us: Emotion by*

design. Mit Press.

Jenkins, H. (2004). Game design as narrative architecture. In P. Wardrip-Fruin N & Harrigan (Ed.), *First person: New media as story, performance, game*. MIT Press.

Jennett, C., Cox, A. L., Cairns, P., Dhoparee, S., Epps, A., Tijs, T., & Walton, A. (2008). Measuring and defining the experience of immersion in games. *International journal of human-computer studies*, *66*(9), 641–661.

King, G., & Krzywinska, T. (2006). *Tomb raiders and space invaders: Videogame forms and contexts*. IB Tauris.

Lankoski, P. (2012). Computer games and emotions. In *The philosophy of computer games* (pp. 39–55). Springer.

Lazzaro, N. (2004). *Four Keys to More Emotion Without Story*. Online. (http://www.itu.dk/people/alec/articles/xeodesign_whyweplaygames.pdf,(Last Accessed 30/03/2015))

Lazzaro, N. (2009). Understand emotions. In C. Bateman (Ed.), *Beyond game design: Nine steps toward creating better videogames*. Cengage Learning.

Leino, O. T. (2010). *Emotions in play: On the constitution of emotion in solitary computer game play* (Unpublished doctoral dissertation). IT-Universitetet i KøbenhavnIT University of Copenhagen, DirektionenManagement, InstituttetThe Department, Center for Computer Games ResearchCenter for Computer Games Research.

MacCallum-Stewart, E., & Parsler, J. (2007). Illusory agency in vampire: The masquerade – bloodlines. *Dichtung Digital*, *37*.

Marsh, T., & Costello, B. (2012). Experience in serious games: between positive and serious experience. In *International conference on serious games development and applications* (pp. 255–267).

Mason, S. (2013). On games and links: Extending the vocabulary of agency and immersion in interactive narratives. In *Proceedings of the 6th international conference on interactive storytelling-volume 8230* (pp. 25–34).

Mateas, M. (2001). A preliminary poetics for interactive drama and games. *Digital Creativity*, *12*(3), 140–152.

Maxis. (1989-date). SimCity series. Game [multi-format]. (California, USA. Played 1995)

Maxis, & The Sims Studio. (2000-date). The Sims series. Game [multi-format]. (Redwood Shores, USA. Played December 2010)

Mekler, E. D., & Bopp, J. A. (2015). Exploring the false affective dichotomy in games–emotions and meta-emotions..

Mekler, E. D., Bopp, J. A., Tuch, A. N., & Opwis, K. (2014). A systematic review of quantitative studies on the enjoyment of digital entertainment games. In *Proceedings of the 32nd annual acm conference on human factors in computing systems* (pp. 927–936).

Mekler, E. D., & Hornbæk, K. (2016). Momentary pleasure or lasting meaning?: Distinguishing eudaimonic and hedonic user experiences. In *Proceedings of the 2016 chi conference on human factors in computing systems* (pp. 4509–4520).

Mekler, E. D., Rank, S., Steinemann, S. T., Birk, M. V., & Iacovides, I. (2016). Designing for emotional complexity in games: The interplay of positive and negative affect. In *Proceedings of the 2016 annual symposium on computer-human interaction in play companion extended abstracts* (pp. 367–371).

Mojang. (2011). Minecraft. Game [multi-format]. (Stockholm, Sweden. Played January 2012.)

Murray, J. H. (1997). *Hamlet on the holodeck: The future of narrative in cyberspace*. The Free Press.

Nacke, L. (2009). *Affective ludology: Scientific measurement of user experience in interactive entertainment* (Unpublished doctoral dissertation). Blekinge Institute of Technology.

Nacke, L. E., Stellmach, S., & Lindley, C. A. (2011). Electroencephalographic assessment of player experience: A pilot study in affective ludology. *Simulation & Gaming*, *42*(5), 632–655.

Oliver, M. B., & Bartsch, A. (2010). Appreciation as audience response: Exploring entertainment gratifications beyond hedonism. *Human Communication Research*, *36*(1), 53–81.

Oliver, M. B., Bowman, N. D., Woolley, J. K., Rogers, R., Sherrick, B. I., & Chung, M.-Y. (2016). Video games as meaningful entertainment experiences. *Psychology of Popular Media Culture*, *5*(4), 390.

Perron, B. (2009). *Horror video games: Essays on the fusion of fear and play*. McFarland.

Plantinga, C. R., & Smith, G. M. (1999). *Passionate views: Film, cognition, and emotion*. Johns Hopkins University Press.

Quantic Dream. (2005). Fahrenheit. Game [multi-format]. (Paris, France. Played February 2006)

Quantic Dream. (2010). Heavy Rain. Game [PS3]. (Paris, France. Played December 2010)

Quantic Dream. (2013). Beyond: Two Souls. Game [PS3]. (Paris, France. Played March 2014)

Salisbury, J. H., & Cole, T. (2016). Grounded theory in games research: Making the case and exploring the options. In *Proceedings of the 1st international joint conference of digra and fdg*.

SCE Japan Studio. (2005). Shadow of the Colossus. Game [PS2]. (Tokyo, Japan. Played 2007)

Schrank, B., & Bolter, J. D. (2014). *Avant-garde videogames: Playing with technoculture*. MIT Press.

Sharp, J. (2015). *Works of game: On the aesthetics of games and art*. MIT Press.

Studios, I. (2015). *New adventures in 80 days!* (http://www.inklestudios.com/2015/09/17/new_adventures.html, accessed March 2017)

Supermassive Games. (2015). Until Dawn. Game [PS4]. (Guildford, UK. Played March 2016.)

Surman, D. (2007). Pleasure, spectacle and reward in capcom's street fighter series. In B. Atkins & T. Krzywinska (Eds.), *Videogame, player, text*. Manchester University Press.

Sykes, J., & Brown, S. (2003). Affective gaming: Measuring emotion through the gamepad. In *Chi'03 extended abstracts on human factors in computing systems* (pp. 732–733).

Tan, E. S. (2013). *Emotion and the structure of narrative film: Film as an emotion machine*. Routledge.

Tanenbaum, K., & Tanenbaum, J. (2009). Commitment to meaning: a reframing of agency in games. *Digital Arts and Culture 2009*.

Tanenbaum, K., & Tanenbaum, J. (2010). Agency as commitment to meaning: communicative competence in games. *Digital Creativity*, *21*(1), 11–17.

Telltale Games. (2012). The Walking Dead. Game [multi-format]. (Telltale Games, San Rafael, USA. Played June 2013.)

thatgamecompany. (2012). Journey. Game [PS3, PS4]. (Los Angeles, USA. Played September 2013.)

The Chinese Room. (2012). Dear Esther. Game [multi-format]. (Brighton, UK. Played April 2012)

The Chinese Room, & SCE Santa Monica. (2015). Everybody's Gone to the Rapture. Game [multi-format]. (Brighton, UK. Played March 2016.)

The Fullbright Company. (2013). Gone Home. Game [multi-format]. (Portland, USA. Played October 2014.)

Wardrip-Fruin, N., Mateas, M., Dow, S., & Sali, S. (2009). Agency reconsidered. *Breaking New Ground: Innovation in Games, Play, Practice and Theory. Proceedings of DiGRA 2009*.

Wirth, W., Hofer, M., & Schramm, H. (2012). Beyond Pleasure: Exploring the Eudaimonic Entertainment Experience. *Human Communication Research*, *38*(4), 406–428.

Wiseman, S., Cox, A., Gould, S., & Brumby, D. (2017). Exploring the effects of non-monetary reimbursement for participants in hci research. *Human Computation*, *4*(1).